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THE FASTEST TRAIN IN THE WORLD.

BY H. G. PROUT, EDITOR OF THE "RAILROAD GAZETTE."

AT THREE o'clock on the afternoon of Sunday, May 28, I left New York for Chicago, and the next Tuesday at 11:15 in the morning I was again in New York. I had travelled 1,928 miles in forty-four hours and fifteen minutes, and out of that time had spent four busy and useful hours in Chicago. This was not done as a *coup de théâtre*, but as a simple matter of business. Any other man, or any woman either, could have done the same thing with perfect comfort and with no more fatigue than must be endured in any railroad journey of so many hours. There was nothing in the motion of the cars or in any other internal conditions to suggest that the train was running unusually fast. I wrote much of the time and made fair "copy." I slept in peace and dined in quietness, and that is more than one can often do on trains making but thirty miles an hour. It was only when one looked out and tried to pick out an individual cross-tie or to catch the fleeting mile-posts that he began to realize the smooth, swift and incessant progress that he was making over the face of the earth. For it must be remembered that while the schedule time of twenty hours for 964 miles from New York to Chicago gives an average speed of 48.2 miles an hour, this includes nine stops, of which seven are long enough to change engines and inspect the running gear. It includes also slackening of speed to take water or at grade crossings and through large towns. The average, therefore, of 48.2 miles an hour does not give the average speed in motion, nor does it give any measure of the maximum speed that must be made for short distances by a train making 964 miles in twenty hours. A great many miles must be run at over sixty miles an hour, and some miles are run considerably faster than that. In the westbound journey, of which I am speaking, two of us timed twenty-five consecutive

miles at an average speed of seventy miles an hour, and we timed one of those miles as having been run in forty-three seconds, or at the rate of eighty-four miles an hour. This record was made under such conditions that I feel warranted in accepting it as accurate. That was probably the highest speed reached on this journey, but much higher speeds have been made on the same ground and by the same engines.

The journey of which I write was made on the first round trip of the twenty-hour service between New York and Chicago, established by the New York Central & Hudson River and the Lake Shore & Michigan Southern railroads—a service which marks an epoch in railroading. It is a brilliant performance in railroad operation, and it is of real importance in human affairs. In both aspects it is deeply interesting, and to look at it merely as a bold piece of advertising, or as an enterprising attempt to draw passengers from other roads, is to take a superficial view.

When in 1881 the train time between New York and Chicago was reduced to twenty-six hours and forty-five minutes there was no great practical reason for reducing it only an hour or two more. One must pass a night and lose a working day on the journey. Bringing the time down to twenty-five hours, as was done two or three years later, enabled the man who left one city in the evening to arrive at the other early enough to dine and go to the theatre the next evening. Or, if he started in the morning, he gained an hour and three-quarters for his business the next morning. Indeed, if he were a tough traveller, and travelled merely for business, as most folks do, he would do about as well to start in the evening by a thirty-six-hour train and pass two nights on the way. By so doing he got tolerable lodgings, he lost no more business time than if he had taken a twenty-five-hour train and saved the extra fare of the “limited” trains.

But the twenty-hour service immediately introduces new conditions. It enables a man to do business in New York, in Chicago and again in New York on three consecutive days, and to get in each city a fair business day. For instance, leaving New York at three o'clock, he is in Chicago at ten the next morning. He has really been twenty hours on the way, but for business purposes he has only been nineteen, because of the difference in longitude. Then he has four clear hours in Chicago, and leaving at two in the afternoon is in New York again at

11:15 the next day. The new trains, therefore, are essentially business men's trains, and if the acceleration of speed stops at the present limit the gain in time will still be one of the most distinct and important improvements in train service that have been made in recent years. If the time can be reduced still another two hours the further advantage will be greater than has been secured in any reduction made between thirty-six hours and twenty-five; and while it is foolish to tempt fate by making gratuitous prophecies, I should not be at all surprised to see the run between New York and Chicago made regularly in eighteen hours within the next two years.

Indeed, it is a fact that when the present acceleration was first planned it was the purpose of the officers of the New York Central and the Lake Shore to make the time nineteen hours; and in the light of what they are now doing there seems to be no serious mechanical reason why they might not have fixed the speed at that point. It would simply have involved running over the Lake Shore at the same average speed as is maintained over the New York Central; and that rate has been kept up for more than twenty months, in regular daily service, with no mishaps and no serious difficulties. The speed of the Empire State Express, which was put in service in October, 1891, is 50.7 miles an hour, including stops. That schedule has been kept up with remarkable punctuality, summer and winter, through all the vicissitudes of traffic and weather. The new twenty-hour train is scheduled for exactly the same speed from New York to Buffalo, but as it does not run into the Buffalo station it has a slight advantage and its "inclusive" speed figures out 50.6 miles an hour. Over the Lake Shore, however, the rate per hour, including stops, is 46.5 miles; but if this part of the run were also made at 50.6 miles an hour Chicago could be reached in nineteen hours from New York. There is no physical reason why trains should not be run just as fast on the Lake Shore as on the New York Central. There are fewer tracks to be sure, but there are fewer trains. The grades are lighter and the line is straighter. The Lake Shore fast engines are smaller in all their dimensions than those of the New York Central and consequently have not so much reserve power to draw upon in case of cross-winds, wet rails, or delays from any of the many contingencies of railroad operation; but no company

has a monopoly of big engines. Whenever the Lake Shore officers decide that the mechanical and financial results will pay them for hammering their rails with 20,350 pounds on each driving-wheel instead of 16,275 pounds, or to distribute the weight on six wheels instead of four, they can put on engines just as powerful as those of the Empire State Express. So, whether or not we are to have nineteen-hour trains probably depends entirely upon the profit of the twenty-hour service. But a reduction of the time to eighteen hours is quite another matter. It means three miles more each hour, for eighteen hours on end, and no one in the world has done that yet, much less proved that it can be done, day in and day out, under the complicated conditions of regular passenger service.

But in speculating on the continuation of the nineteen-hour service, and on still further acceleration, one important condition, possibly the most important, has been ignored. That is the element of competition. The Pennsylvania Railroad led in the reduction to twenty-six hours and forty-five minutes, and again in the reduction to twenty-five hours; it is not likely to sit still and let its greatest competitor carry off the glory and profit of the reduction to twenty hours or less; for there is glory in it and there is a fair chance of profit. I hear it said now, and sometimes by railroad men too, that the Pennsylvania cannot make the run in twenty hours. That is pure nonsense; it is simply a commercial question. Will it pay?

The Pennsylvania would have some advantages and some disadvantages in a contest of time between New York and Chicago. Its line up the Juniata Valley is very crooked, has but two tracks and is crowded with trains; but this is also true of the New York Central's line up the Hudson River Valley; and both are well signalled and well provided with passing sidings.

The grades of the Pennsylvania over the Alleghenies are severe and the line continues crooked to Pittsburg and beyond. The Pennsylvania has to lift every ton that it hauls to a height of 2,162 feet above the sea, while the greatest altitude reached by the New York Central is 919 feet. The heaviest grade of the Pennsylvania, going from Altoona to the summit, is 95 feet to the mile, while (excepting a very short grade between Albany and Schenectady) the heaviest grade of the New York Central, on the eastern slope of the Batavia divide, is 44 feet. But the Pennsyl-

vania's track is excellent, and the line is well equipped with block signals from New York to Crestline, 189 miles west of Pittsburg, or 633 miles in all. In all this distance the only really serious difficulties in fast running are concentrated in about 100 miles, over the Allegheny divide; and the very heavy grades are concentrated in about twenty-five miles just at the summit.

Westward from Pittsburg, on the Fort Wayne route, which is the Pennsylvania's shortest line, there are about 260 miles of single track out of a total of 468. The normal traffic is very heavy, and the long mileage of single track is a serious element in making a fast train schedule, not because of the danger so much as on account of interference with other trains. On the 11th of last February 457 trains were moved on the Pittsburg-Crestline Division in twenty-four hours, and sixty miles of the division was then single track. This was an abnormal condition and only lasted five days, but the whole line is heavily worked, considering the amount of single track.

These are the difficulties that stand in the way of the Pennsylvania's meeting the New York Central's time. There is no question of machinery, track or signals. On the other hand, its line is fifty-two miles shorter, which gives it an advantage of more than an hour in a twenty-hour schedule. Therefore we come back to the proposition that it is purely a business question, and the chances that twenty-hour trains will soon be run on both the great New York-Chicago lines, and that nineteen-hour trains will follow shortly, are good. The eighteen-hour trains may not come so soon as I have conjectured (there I decline to prophesy), but we shall have them, no doubt, as soon as Professor Biles's ships are ready to go from New York to Southampton in four days.*

I have said that the new twenty-hour service is a brilliant and unprecedented feat in railroad operation. This is using the words with due regard for their meaning. It is remarkable for the high speed sustained for a long distance and in that the train is run for almost 1,000 miles for through passengers only. Nothing approaching it has been attempted before in the world. In the summer of 1888 the two great lines from London to Edinburgh, the West Coast, 400½ miles, and the East Coast, 392½ miles, suddenly reduced the time to eight hours, making the speed over the

* See *NORTH AMERICAN REVIEW* for June, 1892, "Thirty Knots an Hour to Europe."

longer route, including three stops, fifty miles an hour. This lasted one month, and the close of the month was marked by one run at 52.7 miles an hour, including five stops. Then, at the end of August, a treaty of peace was made, and the speed was dropped to forty-seven miles an hour, where it stands yet, so far as I know. This "race of the Scotch expresses" was much talked of on two continents. It certainly was an important step in the development of fast long-distance running; but the trains weighed from 175,000 to 225,000 pounds against about 400,000 pounds (or 495,000 pounds with the dining car) for the "Exposition Flyer." All these weights are exclusive of the engines. The distance run, too, was only about 42 per cent. of the run of the new twenty-hour train. But these trains were a demonstration and a stimulus. They ran over one summit 1,015 feet above the sea, with heavy grades, and made their time punctually, up hill and down. They did this with no new kinds of machinery, for some of the engines were thirty years old; it was simply a matter of careful administration. Many miles were made at much above the average speed, and one run is recorded of $76\frac{1}{2}$ miles an hour for four miles. There was much outcry about the danger of such speeds, but there were no mishaps and few delays. The trials proved that with light trains, good track, adequate signals and infrequent stops, a journey speed of over fifty miles an hour could be kept up for four hundred miles without any revolution in machinery or methods.

In the next two or three years several fast trains for moderately long distances were started in the United States, particularly between New York and Washington, but the boldest and most novel step was taken here when the Empire State Express was established in October, 1891. That is like the Scotch expresses in distance run, 439 miles as against 400, with but four stops, and in being much lighter than our ordinary express trains, about 329,000 pounds exclusive of engine and tender, and in making a sustained journey speed (stops included) of 50.7 miles an hour. But it is unlike in that the engines are much more powerful than the English engines, and in that it has run without interruption and without diminution of speed for twenty months, and through two winters. From that service the twenty-hour service now established was the natural sequence.

H. G. PROUT.